Executive Summary

Background

With the rapid expansion of scientific knowledge in the years following World War II, it was recognized by the early 1960's that the vast amount of new biomedical information was not reaching those people who needed it: researchers, educators, and especially the practicing health-care provider. Indeed, while many medical centers had developed into noteworthy generators of basic and clinical research, the health sciences libraries in many of these centers had been woefully neglected. They were crowded and makeshift, with too few trained librarians, insufficient automation and few programs for sharing resources.[1]

In 1965, the President's Commission on Heart Disease, Cancer, and Stroke, chaired by Dr. Michael DeBakey, set as a goal *"to achieve fingertip control of the literature, of all that is known about the causes, treatment, and prevention of heart disease, cancer, and stroke, and to make this knowledge available to researchers, educators, and practitioners."*[2]

The Medical Library Assistance Act (MLAA) of 1965 was enacted to help fulfill this responsibility. With the resources provided by the MLAA, the National Library of Medicine (NLM) and the Nation's medical libraries together have made great strides in the intervening years: previously inadequate medical libraries have expanded and improved their facilities; new libraries have been built; strong collections of books and journals have been developed; professional librarians have been trained; resource sharing has been formalized through the Regional Medical Library (RML) network; and new information technologies have been introduced to automate key library services.

NLM has been at the forefront in the development of new information technology in the health sciences. NLM's MEDLARS®/MEDLINE® network of computerized databases contains more than ten million references to the world's biomedical literature, and provides thousands of health researchers, educators, practitioners, and students immediate access to needed information on a daily basis. The highly successful networking of these online databases has been supported by the nation's medical libraries.

Today, in 1989, we are faced with new challenges as critical as those of the 1960's. A strong library network has been built, yet many health professionals, perhaps the majority, are unaffiliated with a medical library and thus do not have ready and timely access to the vital health information they need. With the availability of advanced personal computers and increasingly good public communications networks, the time has come to reach out to include all individual American health practitioners and to see that they have ready access to NLM's information services.

Congress has recognized this need. In 1987, it encouraged NLM *"... to develop an outreach program aimed at ...[the] transfer of the latest scientific findings to all health professionals... in rural communities and other areas ..."*.[3] The mission of the NLM was explicitly amended to add the function to *"Publicize the availability of [its] products and services..."*[4]

In response to this charge, the NLM Board of Regents convened a Planning Panel on Outreach expressly for the purpose of formulating a plan to guide the Library's efforts to improve access to its information services by every American health professional in all settings. There is an especially strong need to bring the benefits of modern information technology to minority and other underserved health professionals. The Regents sought a plan that would address the need to increase the awareness of prospective users; suggest strategies for removing obstacles to access; and propose mechanisms to ensure the maximum relevance of NLM's diverse array of

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information products and services. This document is such a plan.

The panel met three times during late 1988 and early 1989. Its chair is Dr. Michael DeBakey, a long time proponent of improved medical information services and the former chairman of the 1965 President's Commission on Heart Disease, Cancer, and Stroke. The membership is comprised of leading medical educators, health professionals, scientists, medical librarians, and representatives of the business community.

Findings

This Report sets forth the Panel's major findings in four major categories, each followed by specific actions recommended to NLM and the Panel's calculation of financial and personnel requirements.

1. The Individual and the Regional Medical Library (RML) Network

The Challenge. Under the MLAA authority, the highly successful RML Network overcame the problems of resource building and sharing among institutions. It is now necessary and appropriate to move into the next phase, that of reaching *individual* health professionals and including them in the activities of the Network. There is an especially strong need to bring the benefits of modern information technology to minority and other underserved health professionals.

Recommended Action. *NLM and the RMLs should build a more active partnership for the RML Network, one that will be flexible and permit rapid response to regional needs, geographic factors and changing environmental conditions. The emphasis of the RML Program should be to bring biomedical information resources within easy reach of all health professionals, especially those individuals in areas that do not currently have direct access. To do this, the RMLs should act as a "field force" for NLM products and services, providing information and services to health professionals directly and through network libraries, and providing feedback from health professionals to NLM.*

Recommended Resources. The Panel estimates that an increment of $2 million in FY 1990, increasing to $6 million in FY 1991, is required to enable the RMLs to marshal the resources necessary to reach individual health professionals, to gather specific observations on their information needs, and to demonstrate the use of existing relevant information products and services.

In addition to the current staff, NLM should be permitted to add three persons to its staff to coordinate these programs.

2. Strengthening Hospital Access to National Information Sources

The Challenge. Information resources at a national and international level are growing at a faster rate than the ability of local medical libraries and medical institutions to use them. Shrinking library holdings and collections at the local level, the lack of communications specialists in smaller institutions, and the scarcity of appropriate communications equipment and computers locally are creating a grave danger of isolation of local medical facilities from the growing national information capability.

Recommended Action. *NLM should strengthen and facilitate local institutions' access to national biomedical information sources by:*

- *Assisting local institutions in gaining access to networks by substantially expand-*

ing its extramural resource grant program of "Access" grants.

- *Seeking substantially increased funding for the Integrated Academic Information Management Systems (IAIMS) Program to assist a larger number of institutions that are planning for integrated information services, and to insure sufficient models to accommodate the diversity of IAIMS sites. Present Phase I and Phase II programs (that promise new models for implementation) should be brought to completion; and, most important, Phase III implementation projects should be supported. Funding in subsequent years should support meritorious new applications and proposed models at levels equal to those originally planned.*
- *Assuring biomedical participation in current NSFNET developments and in planning for future advanced electronic communications networks to assure health professionals' access to biomedical information.*

Recommended Resources. In FY 1990 enhanced access to national information sources by institutions at the local level requires incremental funding totalling $9 million, consisting of $2 million in additional resource access grants, $6 million for the IAIMS program, and $1 million for biomedical participation in advanced networks.

In addition to the current staff, NLM should be permitted to add three persons to its staff to coordinate these programs.

3. Training in Health Information Management

The Challenge. There are not adequate numbers of persons in the biomedical fields who have had training in the use of modern computer and communications systems.

There is a need both for biomedical professionals cross-trained in informatics and for persons from computer and information sciences and engineering who have had doctoral or post-doctoral training in the application of these technologies to health problems. Even the major university medical centers that have concentrated their resources on planning for institution-wide information services have found that locating and recruiting senior professionals with this kind of education and training is their greatest obstacle.

Recommended Action. *NLM should substantially increase the number of Medical Informatics training centers, individual awards for research training and career development, and demonstration grants.*

Recommended Resources. $10 million is required in FY 1990 for funding additional training, fellowships, and demonstration grants.

In addition to the current staff, NLM should be permitted to add one person to its staff to coordinate these programs.

4. A New Generation of Information Products and Services

The Challenge. NLM's current products and services serve the health professions very well, but more are necessary. Recent improvements have included:

- 24-hour access to online databases
- GRATEFUL MED® front-end search system for health professionals' personal use
- Improved interconnections between numerous databases
- Elimination of monthly minimum charges, introduction of reduced charges for students, and increased flexibility in arrange-

ments for MEDLINE use by educational and research institutions

- Establishment of DOCLINE® nationwide to facilitate interlibrary borrowing of medical literature
- AIDSLINE® and other special information services in response to national initiatives against this epidemic.

These are excellent examples of NLM's responsiveness to changing needs. In addition, however, NLM should put in place a system to monitor continuously the actual use of its products and services at the level of individual health practitioner, student and researcher. Furthermore, it should establish a continuous "production line" of improved information products and services that are immediately responsive to the needs so identified. This research and development production line should be in addition to the more long range, basic research in which NLM is already engaged.

Recommended Action. *NLM should accelerate intramural R&D on products and services that are optimally responsive to the information needs of health professionals by:*

- *Placing a high priority on research to ascertain the information requirements of U.S. health professionals, the suitability of current means for acquiring health-related information, and impediments to such acquisition. Using these data, NLM should mount a national campaign to increase awareness of its information products and services among all health professionals in all settings, and put in place permanent feedback mechanisms to ensure their optimal utility.*
- *Expanding and enhancing intramural research and development programs leading to the improvement of current information products and services and the creation of new systems.*

Recommended Resources. It is estimated that incremental R&D funding totalling $5 million is required in FY 1990 to ensure NLM's continued ability to offer needed products and services, approximately $2 million for user studies and $3 million for product development.

In addition to the current staff, NLM should be permitted to add 10 persons to its staff to do this research and development.

Staffing

This report recommends significant additional responsibilities and funding for the NLM. It is imperative that NLM obtain additional FTEs that will provide the minimum level of staff support necessary to undertake recommended initiatives as specified. Seventeen FTEs are required in FY 1990 to provide staffing for implementation of this plan's recommendations for improved access in the four specific areas described. This number represents the total of those additional personnel that are specified for each of the major recommendations.

This recommendation for FTEs does not take into account the other obligations of NLM not reviewed at this time. Specifically, it does not include additional FTEs required for the Congressionally mandated National Center for Biotechnology Information and those needed to respond to the increasing volume of literature and service requests.